

Serial No. 10/067,423
Amendment dated February 28, 2006
Response to Office Action dated November 29, 2005

REMARKS

In view of the comments below, Applicant respectfully requests that the Examiner reconsider the present application including rejected claims, as amended, and withdraw the claim rejections.

Claim Amendments

By this response, the applicant has amended claims 4, 9, 14, 18, 20, 24, and 33 to clarify that a local device can remain awake when listening to data being transmitted to it by a remote device, as well as when it is listening to a beacon or transmitting data. Applicants have also amended claim 29 to eliminate an extraneous comma. These amendments are being made solely to clarify what is recited by these claims, and not in response to an art rejection. Any narrowing amendment to the claims in the present amendment is not to be construed as a surrender of any subject matter between the original claims and the present claims; rather this is merely an attempt at providing one or more definitions of what the applicant believes to be suitable patent protection. The present claims provide the intended scope of protection that the applicant is seeking for this application. Therefore, no estoppel should be presumed, and the applicant's claims are intended to include a scope of protection under the Doctrine of Equivalents.

Claim Rejections 35 USC § 102

The Examiner has rejected claims 4-19 and 33-42 under 35 U.S.C. § 102(e) as being allegedly anticipated by United States Patent No. 6,934,752 to Gubbi ("Gubbi"). Applicants respectfully traverse this rejection.

Claim 4, as amended, recites that the plurality of devices are sleeping when not receiving the beacon and not transmitting or receiving data such that the plurality of devices are not receiving data and not transmitting data while sleeping. This feature is not disclosed in Gubbi.

The Examiner has asserted that this feature is shown in Gubbi at column 41, lines 55-57. However, a careful examination of this and other portions of Gubbi will show that this is not the case. This portion of Gubbi simply discloses that in one embodiment, a current proxy point coordinator (PPC) sends a particular subcommand to relieve itself from its responsibilities before going into sleep mode or shutting off.

But disclosing that a PPC might at some point enter into a sleep mode does not disclose or suggest that a plurality of devices enter into a sleep mode when not receiving a

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beacon and not transmitting or receiving data, as required by claim 4. Gubbi is entirely silent as to when a PPC might enter or exit a sleep mode. And it does not disclose or suggest anything about whether any other kind of device, e.g., a multimedia capable station (MMS), might enter into a sleep mode, much less provide any kind of disclosure setting forth when they would enter and leave a sleep mode. In fact, Gubbi makes no other mention of a sleep mode at all beyond the very limited comment identified by the Examiner.

Simply disclosing the existence of a sleep mode for one type of device is not the same as teaching that a plurality of devices enter into a sleep mode when not receiving a beacon and not transmitting or receiving data. And it would be improper for the Examiner to interpret this very narrow portion of Gubbi as providing such a broad teaching.

Thus, Gubbi does not disclose every feature recited in claim 4. Claims 5-8 depend from claim 4 and are allowable for at least the reasons given above for claim 4.

Claim 9, as amended, recites that the plurality of devices are sleeping when not receiving the beacon, not transmitting data, not receiving data, and not transmitting a control message such that the plurality of devices are not receiving data and not transmitting data while sleeping

As noted above, Gubbi simply discloses the existence of a sleep mode, and that a PCC might at some point enter it. Nothing in Gubbi discloses or suggests that a plurality of devices are sleeping when not receiving the beacon, not transmitting data, not receiving data, and not transmitting a control message, as required by claim 9.

Thus, Gubbi does not disclose every feature recited in claim 9. Claims 10-13 depend from claim 9 and are allowable for at least the reasons given above for claim 9.

Claims 14 and 18 both recite that the plurality of devices are sleeping when not receiving the beacon, not transmitting data, not receiving data, and not transmitting a reservation request messages such that the plurality of devices are not receiving data and not transmitting data while sleeping.

As noted above, Gubbi simply discloses the existence of a sleep mode, and that a PCC might at some point enter it. Nothing in Gubbi discloses or suggests that a plurality of devices are sleeping when not receiving the beacon, not transmitting data, not receiving data, and not transmitting a reservation request messages, as required by claims 14 and 18.

Thus, Gubbi does not disclose every feature recited in claims 14 and 18. Claims 15-17 depend from claim 14 and are allowable for at least the reasons given above for claim 14.

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Claim 19 depends from claim 18 and is allowable for at least the reasons given above for claim 18.

Claim 33, as amended, recites that the plurality of devices are sleeping during the guaranteed time slot period when not transmitting or receiving data such that the plurality of devices are not receiving data and not transmitting data while sleeping.

As noted above, Gubbi simply discloses the existence of a sleep mode, and that a PCC might at some point enter it. Nothing in Gubbi discloses or suggests that a plurality of devices are sleeping when not receiving the beacon, not transmitting data, not receiving data, and not transmitting a reservation request messages, as required by claims 14 and 18.

Thus, Gubbi does not disclose every feature recited in claim 33. Claims 34 and 35 depend from claim 33 and are allowable for at least the reasons given above for claim 33.

Claim 36, as amended, recites that each of the at least one device of each of the at least two piconets are sleeping when not receiving the beacon and not transmitting or receiving data such that the at least one device of each of the at least two piconets are not receiving data and not transmitting data while sleeping.

As noted above, Gubbi simply discloses the existence of a sleep mode, and that a PCC might at some point enter it. Nothing in Gubbi discloses or suggests that a plurality of devices are sleeping when not receiving the beacon, not transmitting data, not receiving data, and not transmitting a reservation request messages, as required by claims 14 and 18.

In addition, claim 36 also recites at least two piconets, and a variety of operations performed on at least two piconets. Nothing in Gubbi discloses any operations performed on multiple piconets.

Thus, Gubbi does not disclose every feature recited in claim 36. Claims 37-42 all ultimately depend from claim 36 and are allowable for at least the reasons given above for claim 36.

Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 4-19 and 33-42 under 35 U.S.C. § 102(e) as being allegedly anticipated by Gubbi.

Claim Rejections 35 USC § 103

The Examiner has rejected claims 1-3 and 20-32 under 35 U.S.C. § 103(a) as being allegedly unpatentable over United States Patent No. 6,570,857 to Haartsen et al.

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("Haartsen") in view of United States Patent No. 6,141,336 to Bauchot et al. ("Bauchot").

Applicants respectfully traverse this rejection.

With respect to claim 1, Applicant submits that a large number of elements from claim 1 are not disclosed or suggested by Haartsen or Bauchot, alone or in combination, as set forth below. The Examiner relies upon Haartsen for a teaching of the majority of these elements. However, a careful examination of Haartsen will show that this is not the case.

Claim 1 recites sending from a coordinator a beacon including coordination information to each of the plurality of devices, the beacon including for each of the plurality of devices (1) a device-unique start time indicator corresponding to an exclusive guaranteed time slot for a preselected device of the plurality of devices to transmit data, (2) a transmission duration corresponding to a duration of the exclusive guaranteed time slot, and (3) a shared time slot start time indicator corresponding to a shared time slot separate from the exclusive guaranteed time slots and shared by the plurality of devices. Through this mechanism, a coordinator can assign time slots within a superframe as needed to the plurality of devices in the network. (See, e.g., Applicant's specification, paragraph [0046].)

The Examiner asserts that the device-unique start time indicator and the transmission duration are shown in claim 1 of Haartsen, which recites the steps of (A) broadcasting a paging beacon packet to each of the one or more wireless slave units at fixed intervals during a master-to-slave time slot; (B) receiving the paging beacon packet in each of the one or more wireless slave units; and (C) in each of the one or more wireless slave units, determining whether the received paging beacon packet includes the unique identifier belonging to the wireless slave unit. (See, e.g., Haartsen, column 10, lines 10-20.)

Haartsen describes this in more detail by noting that it discloses a polling system in which parked wireless slave units are offered an opportunity to request access to the piconet. In this polling system a unique response number is allocated to each of the one or more wireless slave units. A polling beacon packet is broadcast by the master unit to each wireless slave units at fixed intervals during a master-to-slave time slot. Receipt of the polling beacon packet by a wireless unit indicates an opportunity to request access to the piconet. Accordingly, if a given wireless unit desires to access the piconet, it transmits a packet to the wireless master unit during a slave-to-master sub-slot that occurs N slave-to-master sub-slots after the polling beacon packet, where N is a function of the unique response number of the given wireless slave units. (See, e.g., Haartsen, column 3, lines 21-41, and FIG. 1.)

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But this is not the same as the beacon including a device-unique start time indicator and a transmission duration, as required by claim 1. In the system of Haartsen, each parked wireless slave unit has a unique identifier and a unique response number assigned to it before it receives its first polling beacon. Thus, when Haartsen sends a polling beacon packet, it need only pass the unique identifier for a given parked wireless slave unit. If the parked wireless slave unit receives that identifier, it knows it can reply in a particular slave-to-master sub-slot after the polling beacon packet, corresponding to its unique response number.

Nothing in Haartsen discloses or suggests that any sort of unique start time indicator is sent for each parked wireless slave unit. The parked wireless slave unit knows before the fact what slave-to-master sub-slot it will be assigned based on its unique response number, i.e., the N^{th} one (where N corresponds to the unit's unique response number). In fact, since each parked wireless slave unit has a fixed slave-to-master sub-slot that it can use, there would be no need for such information to be passed in the beacon of Haartsen.

Likewise, nothing in Haartsen discloses or suggests that any sort of transmission duration is sent for each parked wireless slave unit. The size of the slave-to-master sub-slots does not vary, and is known to the slave units before the polling operation even begins. And, in fact, since each parked wireless slave unit determines the location of its assigned slave-to-master sub-slot based on its unique response number, it would be necessary for the size of the slave-to-master sub-slots to remain fixed. Thus, there would be no need for such information to be passed in the beacon of Haartsen.

Claim 1 also recites storing the device-unique start time indicator and the transmission duration in a memory of each preselected device. For a teaching of this element, the Examiner relies on a portion of Haartsen that notes that its disclosed systems may include, for example, programmable equipment that executes program instructions created in accordance with the principles set forth herein, and stored in any of a variety of computer readable storage media, including but not limited to Random Access Memory (RAM), magnetic storage media (e.g., hard and/or floppy disks) and optical storage media (e.g., Compact Disc (CD) Read Only Storage (ROM)). (See, e.g., Haartsen, column 5, lines 55-65.)

However, the mere presence of a memory unit does not disclose the particular storage operation recited in claim 1. Claim 1 specifically requires that a device-unique start time and a transmission duration be stored in memory. Even if Haartsen disclosed that such information was received (which it does not, as shown above), it certainly does not disclose that this particular information would then be stored in a memory element.

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Claim 1 also recites sleeping after the storing step such that the plurality of devices are not receiving data and not transmitting data while sleeping; transmitting, by each of the plurality of devices, at respective times corresponding to the device-unique start time stored in the memory of each preselected device and for the transmission duration stored in the memory of the preselected device; and returning to sleep, after the transmitting step such that the plurality of devices are not receiving data and are not transmitting data while sleeping. This allows each device to save power by only waking up when a beacon arrives or when it needs to transmit or receive data. (See, e.g., Applicant's specification, paragraph [0049].)

For a teaching of the sleeping after the storage step, the Examiner relies upon a disclosure on Haartsen of the existence of a HOLD mode that allows units to be put inactive for short moments. (See, e.g., Haartsen, column 7, lines 50-53.) However, the Examiner offers no teaching or suggestion as to how or when that HOLD mode should be applied, and specifically offers no teaching or suggestion that it be applied after a storing step.

The simple fact that a HOLD mode exists cannot be used as a suggestion for every possible use of that HOLD mode. And it is inappropriate for the Examiner to specifically interpret the existence of a HOLD mode as rendering obvious the choice to use a sleep operation after a storing operation and before a transmitting operation, as required in claim 1.

For a teaching of the returning to sleep operation, the Examiner relies upon a portion of Haartsen that notes that in cases where a master is already engaged with another (active) slave at the designated time for a beacon transmission, it does not have to abort its operations. Instead it may defer the beacon transmission to the next available master-to-slave slot. The parked units will wake up and read the channel identifier to adjust their clocks. Units not desiring access can then return to sleep until the next beacon event. Units that desire access remain awake and wait until the beacon packet indeed passes along. (See, e.g., Haartsen, column 5, lines 33 and 34.) However, this does not disclose or suggest returning to sleep after transmitting.

Haartsen specifically notes in this portion of its disclosure that units not desiring access can return to sleep after reading a channel identifier until the next beacon event. Thus, this portion of Haartsen shows that a slave device that does not desire to transmit can go back to sleep until the next beacon event, thereby missing all of the master-to-slave slots, including the master-to-slave slot assigned to it. As a result, it would be going to sleep *before* it reached its master-to-slave slot (if any), and thus *before* it would even have the option to transmit. As such, it cannot render obvious an operation of returning to sleep *after* a transmitting operation.

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Bauchot does not cure the deficiencies in Haartsen noted above.

Thus, neither Haartsen nor Bauchot, alone or in combination, disclose or suggest every feature recited in claim 1. Claims 2 and 3 depend from claim 1 and are allowable for at least the reasons given above for claim 1.

Claim 20, as amended, recites that a beacon includes for each of the plurality of devices a device-unique start time indicator corresponding to the exclusive guaranteed time slot for a preselected device of the plurality of devices to transmit data, a transmission duration corresponding to a duration of the exclusive guaranteed time slot, and a shared time slot start time indicator corresponding to a shared time slot separate from the exclusive guaranteed time slots and shared by the plurality of devices, the plurality of devices sleep when not receiving the beacon and not transmitting or receiving data such that the plurality of devices are not receiving data and not transmitting data while sleeping, and each device-unique start time and each transmission duration is set so that only one of the plurality of devices is transmitting at any one time during a period of time including each of the exclusive guaranteed time slots.

Haartsen and Bauchot fail to disclose or suggest these features for reasons analogous to those given above with respect to comparable features in claim 1.

Thus, neither Haartsen nor Bauchot, alone or in combination, disclose or suggest every feature recited in claim 20. Claims 21-23 depend from claim 20 and are allowable for at least the reasons given above for claim 20.

Claim 24 recites that a beacon includes a device-unique start time indicator corresponding to the exclusive guaranteed time slot for the device to transmit data, a transmission duration corresponding to a duration of the exclusive guaranteed time slot, and a shared time slot start time indicator corresponding to a shared time slot separate from the exclusive guaranteed time slots and shared by the plurality of devices, and that the device sleeps when not receiving the beacon and not transmitting or receiving data such that the device is not receiving data and not transmitting data while sleeping.

Haartsen and Bauchot fail to disclose or suggest these features for reasons analogous to those given above with respect to comparable features in claim 1.

Thus, neither Haartsen nor Bauchot, alone or in combination, disclose or suggest every feature recited in claim 24. Claim 25 depends from claim 24 and is allowable for at least the reasons given above for claim 24.

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Claim 26 recites that a beacon includes for each of the plurality of devices a device-unique start time indicator corresponding to an exclusive guaranteed time slot for a preselected device of the plurality of devices to transmit data, a transmission duration corresponding to a duration of the exclusive guaranteed time slot, and a shared time slot start time indicator corresponding to a shared time slot separate from the exclusive guaranteed time slots and shared by the plurality of devices, and that the coordinator sleeps when not transmitting the beacon such that the coordinator is not receiving data and not transmitting data while sleeping, each device-unique start time and each transmission duration is set so that only one of the plurality of devices is transmitting at any one time.

Haartsen and Bauchot fail to disclose or suggest these features for reasons analogous to those given above with respect to comparable features in claim 1.

In particular, just as Haartsen fails to disclose the sleeping operations performed by the non-coordinator devices, it likewise does not disclose such operation by a coordinator. In fact, since the master of Haartsen must complete its poll of all of the slave devices, it would be counter to the teachings of Haartsen to have the master enter into a sleep mode at any time during the polling process.

Thus, neither Haartsen nor Bauchot, alone or in combination, disclose or suggest every feature recited in claim 26. Claim 27 depends from claim 26 and is allowable for at least the reasons given above for claim 26.

Claim 28 recites a first computer code device configured to generate a beacon signal to be transmitted to a plurality of devices of the wireless personal area network, the beacon including for each of the plurality of devices a device-unique start time indicator corresponding to an exclusive guaranteed time slot for a preselected device of the plurality of devices to transmit data, a transmission duration corresponding to a duration of the exclusive guaranteed time slot, and a shared time slot start time indicator corresponding to a shared time slot separate from the exclusive guaranteed time slots and shared by the plurality of devices.

Haartsen and Bauchot fail to disclose or suggest these features for reasons analogous to those given above with respect to comparable features in claim 1.

Thus, neither Haartsen nor Bauchot, alone or in combination, disclose or suggest every feature recited in claim 28. Claims 29 and 30 depend from claim 28 and are allowable for at least the reasons given above for claim 28.

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Claim 31 recites means for sending from a coordinator a beacon including coordination information to each of the plurality of devices, the beacon including for each of the plurality of devices a device-unique start time indicator corresponding to an exclusive guaranteed time slot for a preselected device of the plurality of devices to transmit data, a transmission duration corresponding to a duration of the exclusive guaranteed time slot, and a shared time slot start time indicator corresponding to a shared time slot separate from the exclusive guaranteed time slots and shared by the plurality of devices; means for receiving the beacon by the plurality of devices; means for storing the device-unique start time indicator and the transmission duration in a memory of each preselected device; means for sleeping after device-unique start time indicators and the transmission durations have been stored such that the plurality of devices are not receiving data and not transmitting data while sleeping; means for transmitting, by each of the plurality of devices, at respective times corresponding to the device-unique start time stored in the memory of each preselected device and for the transmission duration stored in the memory of the preselected device; means for returning to sleep, after each of the plurality of devices has transmitted such that the plurality of devices are not receiving data and are not transmitting data while sleeping; and means for waking up at a predetermined time such that another beacon can be received by the plurality of devices.

Haartsen and Bauchot fail to disclose or suggest these features for reasons analogous to those given above with respect to comparable features in claim 1.

Thus, neither Haartsen nor Bauchot, alone or in combination, disclose or suggest every feature recited in claim 31. Claim 32 depends from claim 31 and is allowable for at least the reasons given above for claim 31.

Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 1-3 and 20-32 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Haartsen in view of Bauchot.

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Conclusion

Accordingly, Applicant respectfully submits that the claims, as amended, clearly and patentably distinguishes over the cited references of record and as such is deemed allowable. Such allowance is hereby earnestly and respectfully solicited at an early date. If the Examiner has any suggestions, comments, or questions, calls are welcome at the telephone number below.

Although it is not anticipated that any additional fees are due or payable, the Commissioner is hereby authorized to charge any fees that may be required to Deposit Account No. 50-1147.

Respectfully submitted,



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